APPENDIX F:

BIOLOGICAL ASSESSMENT

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BIOLOGICAL ASSESSMENT
Spring Canyon Wind Project
Logan County, Colorado
formerly known as
The Peetz Table Wind Project

Prepared for

U.S. Department of Energy
Western Area Power Administration
Rocky Mountain Region
Loveland, Colorado

May 2005

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F-1.0 INTRODUCTION

Spring Canyon Energy LLC (SCE), a wholly owned affiliate of Invenergy LLC, applied to the Western Area Power Administration (Western) to interconnect a 130-megawatt (MW) wind power facility to Western's existing 230-kilovolt (kV) Sidney to North Yuma transmission line. Phase I would consist of about 60 MW to be constructed in 2005, pending successful completion of the environmental review process. The size and timing for construction of subsequent phases is not known at this time, but the entire 130-MW project is evaluated in this Biological Assessment (BA). Although the project would have an installed capacity of 130-MW, it is expected to operate at about 38% capacity, so actual output would average about 49 MW. The determinations made herein will be re-evaluated prior to construction of subsequent phases. The Spring Canyon wind project, formerly known as the Peetz Table wind project, would be constructed on private land located east of Peetz, Logan County, Colorado (Figure F-1.1). SCE has obtained or will obtain leases from the private landowners to construct and operate the wind project. Western is the lead federal agency for compliance with the *National Environmental Policy Act of 1969* (NEPA), as amended. There are no cooperating agencies. This BA was prepared in accordance with the *Endangered Species Act* (ESA) to assess the impacts of constructing and operating the wind project on threatened, endangered, proposed, or candidate (TEP&C) species, which Western's execution of the interconnect agreement (a federal action) would enable. For the purposes of this BA, the project area includes all land within the red "Project Area" boundary shown on Figure F-1.1.

The entire wind project would consist of approximately 87 1.5-MW or 72 1.8-MW wind turbines and associated facilities (Phase I would consist of about 40 turbines). The wind turbine generators would be supported by 262-ft tubular towers (Figure F-1.2). Support facilities would include step-up transformers, a substation, underground and overhead power collection and communication lines, roads, and an operation and maintenance (O&M) facility.

Access to the project area would be via Colorado Highway 113 and a network of existing county roads within the project area. Access to wind project facilities, including individual turbines, would be provided by new access roads to be constructed for the purposes of wind project construction and operation. In addition, during construction a large crane would be used to erect towers and turbines, and it would be walked either along project access roads, along collection line corridors, or cross-country along corridors hereafter referred to as crane paths.

The entire project area occupies about 22,054 acres. Of that, the entire 130-MW project would disturb about 222 acres initially and 69 acres for the life-of-project (Table F-1.1). The 60-MW Phase I project would disturb about half of this amount.

Table F-1.1 Estimated Disturbance.

Disturbance Type	Initial Disturbance (acres)	Life-of-project Disturbance (acres)
Turbine assembly areas/pads[1]	80	3
Turbine string corridors (collection line trenches and access roads)[2]	102	47
Other access roads (outside turbine corridors)[3]	8	4
Staging areas and turnarounds[4]	5	5
Collection line trenches (outside turbine corridors)[5]	14	0
Crane paths[6]	0	0
Overhead collection lines[7]	3	<0.1
Substation	10	10
Total	222	69

1 Assumes a 200 x 200-ft assembly area during construction and a 40 x 40-ft permanent pad; assumes 87 turbines.

2 Assumes 24 mi of corridors, 35 ft wide during construction, reclaimed to 16 ft wide for the life-of-project.

3 Assumes 2 mi of access roads outside of turbine corridors, 35 ft wide during construction, reclaimed to 16 ft wide for the life-of-project.

4 Assumes five 1-acre staging areas/turnarounds.

5 Assumes 28 mi of collection line trenches outside turbine corridors, up to 4 ft wide during construction, completely reclaimed for the life-of-project.

6 Crane paths would not be constructed but would result from the overland passage of the large crane.

7 Assumes 1 mi of overhead collection lines, 20 ft wide during construction, reclaimed except for pole locations for life-of-project (100 poles each occupy 2 x 2 ft = 0.01 acre).

F-2.0 CONSULTATION HISTORY

The consultation history, as of April 14, 2005, is provided in Table F-2.1.

Table F-2.1 Summary of Consultation History

Consultation Activity	Date
Letter requesting a species list from Karyn Coppinger, TRC Mariah Associates Inc. (TRC Mariah), on behalf of Western, to Susan Linner, U.S. Fish and Wildlife Service (FWS)	October 28, 2004
On-site visit with Sandy Vana-Miller, FWS; Kirstie Bay, Larry Budde, Larry Crooks, Marty Stratman, and Rick Moss, Colorado Division of Wildlife (CDOW); and Karyn Coppinger and Craig Kling, TRC Mariah	October 29, 2004
Species list and letter received provided to Karyn Coppinger, TRC Mariah, by Susan Linner, FWS	November 22, 2004
Biological Assessment preparation commenced by Karyn Coppinger, TRC Mariah	February 1, 2005
Meeting with Sandy Van-Miller, FWS; Kirstie Bay, CDOW; Rodney Jones and Tracy Custer, Western; Doug Carter, Spring Canyon Energy LLC (SCE); Mike Logsdon, Diamondback Services, Inc.; Brent Orr, attorney; and Karyn Coppinger, TRC Mariah; at Western's office in Loveland	February 9, 2005
Telephone conversation concerning water depletions with Don Anderson, FWS, initiated by Rodney Jones, Western; summarized in email to Karyn Coppinger, TRC Mariah, and Doug Carter, SCE	February 14, 2005
Platte River Biological Opinion provided by Sandy Vana-Miller, FWS, to Karyn Coppinger, TRC Mariah	March 8, 2005

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F-3.0 METHODS

A list of endangered, threatened, proposed, and candidate species that may occur in Logan County was obtained from the U.S. Fish and Wildlife Service (FWS) on November 22, 2004 (Table F-3.1) (Addendum A). The Colorado Natural Heritage Program (CNHP) was queried for information regarding sensitive habitats and threatened and endangered (T&E) species sightings within the project area (Addendum B).

Fieldwork was conducted from February 2-9, 2005, after the turbine locations and proposed access road locations had been staked by SCE and included surveys for habitat and any species within 1,000 ft on either side of each turbine string and proposed new access roads (Figure F-3.1 and Table F-3.2). Therefore, a 2,000-ft wide corridor around all areas to be disturbed was surveyed. In addition, the proposed substation and operation and maintenance building location, including a 200-ft buffer around the substation and operation and maintenance building, was surveyed. The 50-ft wide collection system corridors and crane paths were surveyed on March 31 and April 1. Of the entire 22,054-acre project area, 6,424 acres were surveyed. These surveys were conducted by TRC Mariah Associates Inc. (TRC Mariah) biologists Karyn Coppinger, Larry DeBrey, and Kristy Palmer.

Habitats for species were identified based on current habitat descriptions provided by the FWS. Lists of wildlife species known to occur or that may occur in Logan County were obtained from the Colorado Division of Wildlife (CDOW) (unpublished data). All suitable habitats were mapped using a global positioning system (GPS) either from an all-terrain vehicle or on foot. The GPS data were downloaded into an ArcView geographic information system (GIS) database for the project area, and maps were created.

In addition to TEP&C species habitat mapping, preliminary raptor nest inventories were conducted on October 27, 2004, and on March 28 and 29, 2005, to determine if bald eagle nesting habitat or nests occurred in the project area. All suitable raptor nesting habitat was searched for nests using the naked eye, binoculars, or a spotting scope. All nest locations

Table F-3.1 Federally Listed Species That May Occur in Logan County, Colorado.[1]

Species	Habitat	Potential to Occur in Project Area or to be Affected by the Project
Bald eagle	Breeding and nesting habitat includes rivers, lakes, and reservoirs with forested shorelines of cliffs; winter roosting areas include large trees in sheltered areas near open water; forages widely	No suitable breeding or nesting habitat or winter roost areas occur in the project area; suitable foraging habitat present; flyovers likely
Interior least tern[2]	Breeds and nests in riverine areas with sparsely vegetated sand and gravel bars within wide, unobstructed river channels or salt flats along lake shorelines	No suitable breeding or nesting habitat in project area; known to occur in Logan County; possible flyovers during migration; occurs in the South Platte River, downstream from the project area
Pallid sturgeon[2]	Bottoms of large, turbid, relatively warm free-flowing rivers	Occurs in the South Platte River, downstream from the project area
Piping plover[2]	Wide, sparsely vegetated sand or gravel beaches adjacent to vast alkali lakes; washed-out hillside beaches on smaller, semi-permanent alkali wetlands; beaches, sand flats, and floodplains; forage near water	No suitable breeding or nesting habitat in project area; known to occur in Logan County; possible flyovers during migration; occurs in the South Platte River, downstream from the project area
Whooping crane[2]	Breeding and nesting occurs in Wood Buffalo National Park, Alberta and Northwest Territories, Canada; they winter in Aransas National Park, Texas; whooping cranes use a variety of habitats during migration including cropland, wetlands, and riverine habitat	No breeding or nesting habitat occurs in the project area; known to occur in Logan County; possible flyovers and stopovers in cropland during migration; occurs in the South Platte River, downstream from the project area

[1] Source: Letter from Susan Linner, U.S. Fish and Wildlife Service, to Karyn Coppinger, TRC Mariah Associates Inc., November 22, 2004 (see Addendum A).

[2] Water depletions in the South Platte River may affect the species and/or critical habitat in downstream reaches in other states.

Table F-3.2 Survey Summary.

Project Attribute	Survey Corridor Width/Area	Survey Dates	Personnel
Turbine strings	2,000 ft	Feb 2-9, 2005	Larry DeBrey and Kristy Palmer
Access roads	2,000 ft	Feb 2-9, 2005	Larry DeBrey and Kristy Palmer
Crane paths	50 ft	Mar 31-Apr 1, 2005	Karyn Coppinger
Collection line corridors	50 ft	Mar 31-Apr 1, 2005	Karyn Coppinger
Substation and O&M building	26 acres[1]	Feb 2-9, 2005	Larry DeBrey and Kristy Palmer
Project Area	All suitable raptor nesting habitat	Oct 27, 2004; Mar 28-29, 2005	Larry DeBrey and Diane Thomas

[1] Includes a 10-acre construction site plus a 200-ft buffer.

(regardless of species) were mapped on a 7.5' topographic map, photographs were taken, and a raptor nest inventory data sheet was completed. These surveys were conducted by TRC Mariah biologists Larry DeBrey and Diane Thomas.

On January 29, 2005, Karyn Coppinger (TRC Mariah) was on-site conducting other business and observed a bald eagle perched on the ground in a farmed field.

No federally listed plant species are expected to occur in Logan County. Plant species are not discussed further in this BA.

F-4.0 OVERVIEW OF THE PROJECT AREA

Project area vegetation is a mosaic of farmland (12,660 acres or 57% of the project area), Conservation Reserve Program (CRP) land (2,300 acres [10%]), native prairie (7,094 acres [32%]), and shelterbelts (scattered throughout the project area) (see Figure F-3.1). Principal crops are winter wheat and millet. Some areas are interseeded and used for hay and/or pasture for livestock. CRP land typically contains a mixture of tall and short grasses and may be grazed by livestock or returned to crop production when the CRP contract expires, unless the CRP is extended and these areas are re-enrolled. Native vegetation is typical of shortgrass prairie, with species such as blue grama, buffalograss, western wheatgrass, little bluestem, switchgrass, prairie sandreed, sand dropseed, and sedges common. Shrubs typically include big sagebrush, rabbitbrush, Rocky Mountain juniper, eastern red cedar, yellow current chokecherry, squawbush, wild current, and wild plum. Many farmsteads and abandoned farm sites have an adjacent shelterbelt of trees and shrubs. Most of the shelterbelts on abandoned farmsteads contain decadent/senescent trees.

There are 6,424 acres within the 2,000-ft and 50-ft survey corridors, 2,445 acres of which are native prairie, 2,967 acres of which are cropland, and 1,012 acres of which are CRP land. An estimated 84 acres of native prairie, 102 acres of cropland, and 36 acres of CRP land would be disturbed during construction. Life-of-project disturbance would include an estimated 26 acres of prairie, 32 acres of cropland, and 11 acres of CRP land.

The project area provides habitat for a variety of wildlife species typical of agricultural lands and native shortgrass prairie in northeastern Colorado, including big game (pronghorn antelope and mule deer); predator species (coyote, red fox, swift fox, raccoon, long-tailed weasel, mink, American badger, eastern spotted skunk, striped skunk, and, possibly, bobcat and mountain lion) (CDOW unpublished data); small mammals; bats; reptiles; amphibians; and birds.

An estimated 266 species of birds occur in Logan County and may occur in the project area--most species probably occur in the project area only during migration and thus would be

occasional visitors only. Many of the species (i.e., waterfowl, shorebirds, waders) known to occur or potentially occur in Logan County, including bald eagle, whooping crane, interior least tern, and piping plover, would not breed in the project area because no breeding or nesting habitat exists, but they may occasionally visit the project area, feeding in agricultural fields during migration (see Section F-5.0). The project area contains potential breeding and nesting habitat for several species of raptors, but not for bald eagles (see Section F-5.3).

F-5.0 SPECIES ACCOUNTS

The following species accounts were excerpted from the reference FWS species accounts.

F-5.1 BALD EAGLE

The bald eagle was listed endangered in 1967 (32 FR 4001, March 11, 1967), was downlisted to threatened in 1995 (60 FR 35999-36010, July 12, 1995), and was recommended for delisting in 1999 (64 FR 36453-36464, July 6, 1999), but it was determined by the FWS that additional data would be needed before taking this action. Current bald eagle range includes all of the conterminous U.S. and Alaska (FWS 2005a).

Bald eagles require cliffs, large trees, or sheltered canyons associated with concentrated food sources (e.g., fisheries or water fowl concentration areas) for nesting and/or roosting.

The decline of the bald eagle was primarily due to the use of DDT. Eagles contaminated with DDT either failed to produce eggs or produced eggs with thin shells that broke during incubation. Shooting, trapping, and poisoning also contributed to bald eagle decline (FWS 2005a). After DDT was banned and the birds and nests were given more protection, bald eagle populations recovered to the point that they are being considered for delisting (see above). Current threats to bald eagles include loss of nesting habitat due to development on inland rivers and other waterways, as well as along the coasts.

No bald eagle breeding or nesting habitat occurs in the project area. Bald eagles are known to be winter visitors in the region, and the dead trees in shelterbelts scattered throughout the area may provide perching habitat. Although the area is over 20 mi from perennial water that has preferred bald eagle feeding areas including fisheries and waterfowl concentration areas (e.g., the South Platte River, Sterling Reservoir, and Jumbo Reservoir), bald eagles can easily cover this distance while foraging and thus may forage on the project area at any time of year. A bald eagle was observed in the project area perched on the ground in a farmed field on January 28,

2005. (Figure F-3.1 shows the locations of the project area's vegetation types.) The CDOW does not have raptor nest records for this area (personal communication, October 2004, with Byron Gillham, CDOW), so it is not known if bald eagles nest in the general vicinity, but the lack of preferred nesting habitat suggests that bald eagle nesting is unlikely. None of the nests observed in the project area during fall 2004 or spring of 2005 appear to be bald eagle nests.

Impacts to bald eagles could include direct mortality due to collisions with turbines and overhead power lines. In the wind power literature (e.g., National Wind Coordinating Committee 2001), collisions with turbines is a rare event, and, if eagles only infrequently visit the area, potential for collision-related mortality is low. SCE would use state-of-the-art turbine technology, including large unguyed turbines with tubular towers and slow-moving rotors and few perches, which reduce potential for bird collisions. The 1.0 mi overhead of power lines would be designed per the *Suggested Practices for Raptor Protection on Power Lines--the State of the Art in 1996* (Avian Power Line Interaction Committee 1996) to avoid potential electrocution impacts. Bald eagles feed on carrion, among other things, and thus are at risk of collision with vehicles when they feed on road-killed animals, but again, there is low potential for this impact. Eagles may be attracted to the area if construction increases the number of road kills; a recommended mitigation is to set and enforce speed traffic speed limits and to keep carrion off roads if it is noted that bald eagles are attracted to road-killed animals.

No indirect effects, such as displacement from preferred habitat or loss of prey base, are anticipated because the project area does not contain preferred habitat and eagles are likely only rare visitors to the area.

The project may affect, but is not likely to adversely affect, bald eagles.

F-5.2 INTERIOR LEAST TERN

The least tern, including the interior least tern, was listed endangered (50 *Federal Register* [FR] 21784-21792, May 28, 1985) in the U.S., except within 50 mi of the coast (FWS 2005c).

Interior least tern breeding range historically extended from Texas (along the Mississippi, Red, and Rio Grande Rivers) to Montana and from eastern Colorado and New Mexico to southern Indiana (along the Missouri, Arkansas, Mississippi, and Ohio river systems) (FWS 2005c). While the current breeding range is similar, breeding is generally restricted to the less altered river segments.

The interior least tern typically nests in riverine habitats on sparsely vegetated sand and gravel bars within wide unobstructed river channels or on salt flats along lake shorelines (FWS 2005c). However, it has also been documented as nesting in sand and gravel pits, in diked fields in Mississippi, in power plant ash disposal areas, and along reservoir shorelines.

Past threats to the interior least tern have largely resulted from the destruction of nesting islands in the river systems due to reservoir construction or river channelization projects (FWS 2005c) or flood control projects that limit development of sandbars. Alteration of natural river dynamics has also altered vegetation on many remaining islands, rendering them unsuitable for nesting. Current threats include the continued construction of reservoirs and channelization projects, which eliminates or alters the island nesting habitat. Furthermore, there is additional human presence in the form of river recreational activities, including not only the water sports but also utilization of sand bars for coastal beach-type activities, all of which reduces least tern reproduction success.

No suitable breeding or nesting habitat for the interior least tern occurs within the project area. Least tern are known to occur in Logan County (CDOW unpublished data), where the Platte River, about 20 mi south of the project area, serves as a local migration corridor. There are no recorded least tern observations in the project area (CNHP 2004). Least terns may migrate through the project area during spring and fall migration, but, due to the absence of rivers and reservoirs within or near the project, they would be infrequent visitors to the area, mostly in spring and fall.

Impacts to least terns due to collision with wind turbines and the 1.0 mi of overhead power lines would be similar to those described for bald eagles. Impacts to least terns due to surface water depletions in the Platte River are discussed in Section 5.6 below.

F-5.3 PIPING PLOVER

The piping plover was listed threatened (50 FR 50726-50734, December 11, 1985) in its entire range except for the Great Lakes watershed where it was listed endangered (FWS 2005d).

The breeding range of the Northern Great Plains population of the piping plover extends from the alkali wetlands in southeastern Alberta, through southern Saskatchewan, Manitoba, and Ontario, and into Minnesota, northeastern Colorado (Prewitt Reservoir), northwestern Oklahoma, northeastern Montana, North Dakota, South Dakota, Nebraska, and Iowa (FWS 2005d). The piping plover winters primarily on the gulf coast in Texas, Louisiana, Alabama, and Florida. Critical wintering habitat for the Northern Great Plains population was designated in Texas, Louisiana, Alabama, and Florida; critical breeding habitat has been designated in areas of Minnesota, Montana, North Dakota, South Dakota, and Nebraska.

The Northern Great Plains population of piping plover favors wide, sparsely vegetated sand or gravel beaches adjacent to large alkali lakes. Washed-out hillside beaches on smaller lakes adjacent to pastures or rangeland in mid- and shortgrass prairie vegetation may also be utilized. They forage on invertebrates near water.

Piping plover were hunted to near extinction for the hat-making industry during the 1800s (FWS 2005d). Current threats are primarily the loss of vegetated sandbars and river islands due to flood control and navigation activities. Rapidly rising water levels caused by water level regulation policies during nesting and brood-rearing reduces reproductive success. Some sand pit operations entice piping plovers to nest in relatively sterile environments, making it difficult for chicks to find adequate food.

No suitable breeding or nesting habitat for piping plover occurs in the project area, but this species is known to occur in Logan County (CDOW unpublished data) where the Platte River, about 20 mi south of the project area, serves as a preferred migration corridor. There are no recorded piping plover observations in the project area (CNHP 2004). Piping plovers may migrate through the project area during spring and fall migration, but, due to the absence of rivers and reservoirs within or near the project, they would be infrequent visitors to the area, mostly in spring and fall.

Impacts to piping plovers due to collision with wind turbines and the 1.0 mi of overhead power lines would be similar to those described for bald eagles. Impacts to piping plovers due to surface water depletions in the Platte River are discussed in Section 5.6 below.

F-5.4 WHOOPING CRANE

The whooping crane was listed endangered (32 FR 4001, March 11, 1967) except for the nonessential experimental populations in Colorado, Indiana, Florida, New Mexico, Utah, and the western half of Wyoming (66 FR 33903-33917, June 26, 2001; 62 FR 38932-38939, July 21, 1997; and 58 FR 5647-5658, January 22, 1993).

Whooping cranes winter on the Texas Gulf coast, including Aransas National Wildlife Refuge, Texas, and Bosque de Apache NWR, New Mexico (FWS 2005b). They migrate and stage throughout northeastern Montana, the western half of North Dakota, and central portions of South Dakota, Nebraska, Oklahoma, and east-central Texas. The five areas of critical habitat occur in Idaho, Kansas, Nebraska, Oklahoma, and Texas. These areas provide habitat for roosting, resting, and foraging during migration.

Whooping cranes nest in wetlands in Wood Buffalo National Park, Alberta and Northwest Territories, Canada. They utilize a variety of habitats during migration, feeding in croplands and roosting in large wetlands (FWS 2005b). They also roost in riverine habitat, generally on submerged sandbars in wide unobstructed channels away from human disturbance. The Platte

River, approximately 200 mi east of the project area in Nebraska, is a well-known stopover location for migrating whooping cranes. Whooping cranes winter in Aransas National Wildlife Refuge and adjacent islands in Texas.

Past threats to whooping cranes were largely the conversion of the Northern Great Plains to agriculture, especially the conversion of prairie pothole habitat and the increased human activity associated with these practices (FWS 2005b). In addition, rural electrification resulted in the widespread construction of power lines, and collisions with power lines are known to have caused death or injury to at least 19 whooping cranes since 1956. Whooping crane population recovery is slow due to delayed sexual maturity, small clutch size, and low recruitment rates. A short ice-free season in Wood Buffalo National Park also may limit the potential to produce a second clutch of chicks if the first clutch fails. Current threats include obstacles encountered during migration, snow and hail, low temperatures, and drought that causes navigational problems and results in collisions with obstructions. Predators, disease, and shooting are also current threats, as are hurricanes and drought on wintering grounds.

Since whooping cranes adhere to ancestral breeding, migrating, and wintering areas and routes, they are not likely to occupy new habitats, and thus habitat destruction within the occupied range remains a major threat. An accidental petroleum spill along the Texas coast could destroy whooping cranes and their food sources.

No breeding or nesting habitat for whooping cranes occurs in the project area. Whooping cranes are known to occur in Logan County (CDOW unpublished data), but they are typically found in areas around the South Platte River, a preferred migratory corridor, over 20 mi south of the project area. There are no recorded whooping crane observations in the project area (CNHP 2004); there is, however, one recorded whooping crane observation (1979) in Cheyenne County, Nebraska (personal communication, January 2005, with Rick Schneider, Nebraska Wildlife and Parks Commission), which is immediately north of the project area. Whooping cranes may migrate through the project area and possibly stopover in the project area's agricultural fields

(Figure F-4.1) to feed. In general, however, they would be infrequent visitors to the area, mostly in spring and fall.

Impacts to whooping cranes due to collision with wind turbines and the 1.0 mi of overhead power lines would be similar to those described for bald eagles. Impacts to whooping cranes due to surface water depletions in the Platte River are discussed in Section 5.6 below.

F-5.5 PALLID STURGEON

The pallid sturgeon was listed endangered throughout its entire range on September 6, 1990 (FWS 2005e). It is known to occur in Arkansas, Iowa, Illinois, Kansas, Kentucky, Louisiana, Missouri, Montana, North Dakota, Nebraska, South Dakota, and Tennessee. It is one of the rarest fishes in North America (FWS 2002). Since 1980, it has been reported most frequently in the Missouri River between the Marias River and Fort Peck Reservoir; between Fort Peck Dam and Lake Sakakawea; within the lower 70 mi of the Yellowstone River downstream of Fallon, Montana; and in the Missouri and Platte Rivers near Plattsmouth, Nebraska.

Past and current threats to the pallid sturgeon are the destruction and alteration of riverine or aquatic habitats, which have adverse effects on reproduction, growth, and survival (FWS 2002). Impoundments have resulted in reduced sediment discharge and loss of introduced organic matter and woody debris, which in turn has increased river bed degradation and loss of hydrologic connection with shallow backwater areas that are important nursery habitat for larval fish. Channelization, channel stabilization, and snag removal for navigation have also resulted in loss of habitat and food production areas for pallid sturgeon.

No habitat for pallid sturgeon occurs in the project area, but it is a species of concern in Logan County because water depletions in the South Platte River may affect the species and/or critical habitat downstream (see Section 5.6).

F-5.6 WATER DEPLETIONS--WHOOPING CRANE, INTERIOR LEAST TERN, PIPING PLOVER, AND PALLID STURGEON

Indirect impacts could occur if the project resulted in water depletions in the South Platte River. On average, the project would use an estimated 0.2 acre-ft per year (Table F-4.1).

Water for the construction will be obtained from permitted commercial or municipal sources such as a local batch plant in Peetz or Sterling, Colorado, or Sidney, Nebraska, and none of these sources would be required to increase water production to meet project demands. During construction, an estimated 765,085 gallons of water would be used to mix concrete, for dust control, and for compaction. An estimated 754,377 gallons of this amount would be consumed in concrete for turbine foundations and 10,708 would be used to construct the substation. An estimated 761,250 gallons would be used for road construction. An estimated 32,625 gallons (0.1 acre-ft) per year would be used for dust control for the 39-year operational life-of-project.

Table F-5.1 Estimated Water Use Per Year and for the Life-of-Project.

Stage of Project	Yards of Concrete/Facility	Gal/yd	Gal/Facility	No. Facilities	Total Gal
Construction					
Turbines	299	29	8,671	87	754,377
Substation	292	29	8,468	1	8,468
Soil compaction (substation)					2,240
Roads	7,612.5 gal/day for 20 days/month for 5 months				761,250
Total water used during construction					1,526,335
Operation					
Water for dust suppression	32,625 gal/yr for 39 years of operation				1,272,375
Totals and Averages					
Total used for the 40-year life-of-project (construction and operation)					2,798,710
Average water use/yr					69,968
Average water use/yr in acre-ft					0.2

During construction of the 130-MW wind project, an estimated 1,526,335 gallons (4.7 acre-ft) of water would be consumed. During the 39-year operational life-of-project, an additional 1,272,375 gallons (3.9 acre-ft) would be consumed. Total water usage over the life-of-project would be 2,798,710 gallons, so over a 40-year life-of-project, an average of 69,968 gallons (0.2 acre-ft) per year would be consumed.

In 2002, the FWS prepared a biological opinion in its *Revised Intra-Service Section 7 Consultation for Federal Agency Actions Resulting in Minor Water Depletions to the Platte River System* (FWS 2002). The biological opinion covers any federal actions other than wetland restoration projects that result in average annual depletions of 25 acre-ft or less to the Platte River system, regardless of location within the basin. The effects analysis and conservation measures apply only to federally listed species, designated whooping crane habitat, and proposed critical habitat for the piping plover along the Platte River in Nebraska.

In accordance with the above-referenced biological opinion, "Federal agencies should continue to conclude that each action resulting in a depletion of 25-acre feet or less per year to the Platte River system may adversely affect the whooping crane, interior least tern, piping plover, and/or pallid sturgeon, designated whooping crane critical habitat, and proposed piping plover critical habitat" (FWS 2002). Since the Spring Canyon wind project would result in a depletion of less than 25-acre ft/year, the project may adversely affect these species and critical habitats. No mitigation is required because the U.S. Forest Service and the FWS have provided funds to a Fish and Wildlife Foundation account for the purposes of off-setting the adverse effects of federal agency actions resulting in minor water depletions, such as the Spring Canyon wind project.

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F-6.0 LIST OF CONTACTS

Table F-5.1 presents a list of contacts made to assist with the analysis presented in this BA.

Table F-6.1 Consultation and Coordination.

Contact	Affiliation, Location	Date	Purpose of Contact
Federal			
Don Anderson	FWS, Lakewood	March 2005	Information regarding minor depletions
Sandy Vana-Miller	FWS, Lakewood	October 2004; February 2005; March 2005	On-site visit to discuss wildlife issues; wildlife mitigation meeting; information regarding minor depletions
Susan Linner	FWS, Lakewood	November 2004	Provide information on TEP&C species and migratory birds
State			
Kirstie Bay	CDOW, Brush	October 2004; February 2005	On-site visit to discuss wildlife issues; wildlife mitigation meeting
Larry Budde	CDOW, Brush	October 2004	On-site visit to discuss wildlife issues
Larry Crooks	CDOW, Julesburg	October 2004	On-site visit to discuss wildlife issues
Byron Gillham	CDOW, Peetz	October 2004; December 2004	Obtain local information concerning wildlife
Michael Meneffee	CNHP, Fort Collins	October 2004	Database search for sensitive species and communities
Rick Moss	CDOW, retired	October 2004	On-site visit to discuss wildlife issues
Marty Stratman	CDOW, Brush	October 2004	On-site visit to discuss wildlife issues

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F-7.0 LITERATURE CITED

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ADDENDUM F-A:

LETTER FROM SUSAN LINNER, U.S. FISH AND WILDLIFE SERVICE,
LAKEWOOD, COLORADO, TO KARYN COPPINGER,
TRC MARIAH ASSOCIATES INC., LARAMIE, WYOMING,
DATED NOVEMBER 22, 2004

Rec. 11-24-04
KDC
File #

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Colorado Field Office
755 Parfet Street, Suite 361
Lakewood, Colorado 80215

IN REPLY REFER TO:
ES/CO: Wind Energy/WAPA-Invenergy Wind
Mail Stop 65412

NOV 22 2004

Ms. Karyn Coppinger
TRC Solutions
605 Skyline Drive
Laramie, Wyoming 82070-8909

Dear Ms. Coppinger:

The U.S. Fish and Wildlife Service (Service) received your letter dated October 28, 2004, regarding the **proposed Peetz Table Wind Power Project in Logan County, Colorado**. These comments have been prepared under the provisions of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 et. seq.), the Bald and Golden Eagle Protection Act of 1940 (BGEPA), as amended (16 U.S.C. 668 et. seq.), the Migratory Bird Treaty Act of 1918 (MBTA), as amended (16 U.S.C. 703 et. seq.), and the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321-4327).

On May 13, 2003, the Service issued *Interim Guidance on Avoiding and Minimizing Impacts to Wildlife from Wind Turbines* (Guidance), which can be found at the following link: http://www.fws.gov/r9dhcbfa/wind.pdf. Similar to the Service's voluntary guidance addressing the siting, construction, operation, and decommissioning of communication towers and the voluntary guidance developed in cooperation with the electric utility industry to minimize bird strikes and electrocutions (APLIC 1994, APLIC 1996), the Guidance is intended to assist the wind energy industry in avoiding or minimizing impacts to wildlife and their habitats. This is accomplished through: (1) proper evaluation of potential Wind Resource Areas (WRAs), (2) proper location and design of turbines and associated structures within WRAs selected for development, and (3) pre- and post-construction research and monitoring to identify and/or assess impacts to wildlife. The Guidance is based on current science and will be updated as new information becomes available; it is voluntary and interim in nature. The Guidance will be evaluated over a 2-year period and then modified as necessary based on field performance, comments from the public, and on the latest scientific and technical discoveries developed in coordination with industry, states, academic researchers, and other Federal agencies. After the 2-year period, the Service plans to develop a complete operations manual for evaluation, site selection, design, construction, operation, and monitoring of wind energy facilities in both terrestrial and aquatic environments.

Data on wildlife use and mortality collected at one wind energy facility are not necessarily applicable to others; each site poses its own set of possibilities for negative effects on wildlife. In addition, the wind industry is rapidly expanding into habitats and regions that have not been well studied. The Service therefore suggests a precautionary approach to site selection and development, and will employ this approach in making recommendations and assessing impacts of wind energy developments. We encourage the wind energy industry to follow the Guidance and, in cooperation with the Service, to conduct scientific research to provide additional information on the impacts of wind energy development on wildlife. We further encourage the industry to look for opportunities to promote bird and other wildlife conservation when planning wind energy facilities (e.g., voluntary habitat acquisition or conservation easements).

The Service is guided by the Fish and Wildlife Service Mitigation Policy (Federal Register 46 (15), January 1981) in evaluating modifications to or loss of habitat caused by development. This policy follows the sequence of steps recommended in the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of NEPA in seeking to avoid, minimize, or compensate for negative impacts. Mitigation can involve (1) avoiding the impact of an activity by taking no action; (2) minimizing impacts by limiting the degree of activity; (3) rectifying an impact by repairing, rehabilitating, or restoring an affected environment; (4) reducing or eliminating an impact by conducting activities that preserve and maintain the resources; or (5) compensating for an impact by replacing or providing substitute resources or environments.

Any mitigation recommended by the Service for wind energy development would be voluntary on the part of the developer unless made a condition of a Federal license or permit. Mitigation does not apply to "take" of species under the MBTA, BGEPA, or ESA. The goal of the Service under these laws is the elimination of loss of migratory birds and endangered and threatened species due to wind energy development. The Service will actively expand partnerships with regional, national, and international organizations, States, tribes, industry, and environmental groups to meet this goal.

Projects with Federal involvement may require additional analysis under NEPA, ESA, or the National Wildlife Refuge System Administration Act. This includes projects on federally owned lands (e.g., National Wildlife Refuges, National Forests), lands where a Federal permit is required for development (e.g., BLM-administered lands and jurisdictional wetlands), or lands where Federal funds were used for purchase or improvement (some State Wildlife Management Areas).

The Guidance contains a site evaluation process, called the Potential Impact Index (PII), with checklists for pre-development evaluations of potential terrestrial wind energy development sites. This site evaluation protocol was developed by a team of Federal, State, university, and wind energy industry biologists to rank potential terrestrial wind energy development sites by their potential impacts on wildlife. The PII represents a "first cut" analysis of the suitability of a site proposed for development. It does so by estimating use of the site by selected wildlife species as an indicator of potential impact. Emphasis of the PII is on initial site evaluation and is intended to provide more objectivity than simple reconnaissance surveys. There are two steps to follow:

1. Identify and evaluate reference sites, preferably within the general geographic area of the proposed facility. Reference sites are high-quality wildlife areas where wind development would result in the maximum negative impact on wildlife (i.e., sites selected to have the highest possible rank using the protocol). Reference sites are used to determine the comparative risks of developing other potential sites.

2. Evaluate potential development sites to determine risk to wildlife and rank sites against each other using the highest-ranking reference site as a standard. Although high-ranking sites are generally less desirable for wind energy development, a high rank does not necessarily preclude development of a site, nor does a low rank automatically eliminate the need to conduct predevelopment assessments of wildlife resources or post-development assessments of impacts.

Use of this process allows comparison of one site with another with respect to the impacts that would occur to wildlife if the area were developed. The evaluation area for a potential development site should include the "footprint" encompassing all of the turbines and associated structures including transmission lines planned for that proposed facility, and the adjacent wildlife habitats which may be affected by the proximity of the structures. Transmission lines extending outside the footprint may be excluded. All potential development sites within a geographic area should be evaluated before a site is selected for development.

Pre-development evaluations should be conducted by a team that includes Federal and/or State agency wildlife professionals with no vested interest (e.g., monetary or personal business gain) in the sites selected. Teams may also include academic and industry wildlife professionals as available. Any site evaluations conducted by teams that do not include Federal and/or State agency wildlife professionals will not be considered valid evaluations by the Service. The pre-development evaluation may also identify additional studies needed prior to and after development. Post-construction monitoring to identify any wildlife impacts is recommended at all developed sites. Pre- and post-development studies and monitoring may be conducted by any qualified wildlife biologist without regard to his/her affiliation or interest in the site.

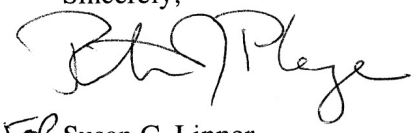
Please also be aware of the potential application of the MBTA and the BGEPA to wind projects involving transmission lines. Protective measures to help reduce possible impacts to migratory birds and other raptors should be installed. 7 CFR § 1724.52 allows for deviations from construction standards for raptor protection, provided that structures are designed and constructed in accordance with *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996* published by the Edison Electric Institute/Raptor Research Foundation. The regulation requires that such structures be in accordance with the National Electrical Safety Code and applicable State and local regulations.

For your convenience, we have enclosed a list of Colorado's threatened and endangered species, as well as the counties in which they are known to occur. We cannot provide site-specific details.

If questions regarding site-specific presence of an endangered species, the extent of its habitat, or the effects of a particular action need to be resolved, the Service recommends that a knowledgeable consultant be contacted to conduct habitat and population assessments or to provide recommendations regarding options under the ESA. Due to staffing constraints, the Colorado Field Office cannot provide you with these services.

If the Service can be of further assistance, please contact Sandy Vana-Miller of my staff at (303) 275-2370.

Sincerely,



FOR Susan C. Linner
Colorado Field Supervisor

Enclosure: Species List

cc: FWSR6, B. Dach
FWSR6/GJ, E. Mayo
FWSR6/LK, S. Vana-Miller

U. S. Fish and Wildlife Service
Ecological Services
Colorado Field Office

(Effective August 16, 2004)

FEDERALLY LISTED AND CANDIDATE SPECIES & THEIR STATUS IN COLORADO

COUNTIES→	ADAMS	ALAMOSA	ARAPAHOE	ARCHULETA	BACA	BENT	BOULDER	BROOMFIELD	CHAFFEE	CHEYENNE	CLEAR CREEK	CONEJOS	COSTILLA	CROWLEY	CUSTER	DELTA	DENVER
Bald eagle, *Haliaeetus leucocephalus*, Listed Threatened	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Gunnison sage-grouse, *Centrocercus minimus*, Candidate for Listing		✓		✓					✓			✓	✓			✓	
Least tern (interior population), *Sterna antillarum*, Listed Endangered	▲		▲			✓	▲	▲			▲			✓			▲
Lesser prairie chicken, *Tympanuchus pallidicinctus*, Candidate for Listing					✓	✓				✓				✓			
Mexican spotted owl, *Strix occidentalis lucida*, Listed Threatened	✓	✓	✓	✓			✓		✓		✓	✓	✓		✓		
Piping plover, *Charadrius melodus*, Listed Threatened	▲		▲			✓	▲	▲			▲			✓			▲
Southwestern willow flycatcher, *Empidonax traillii extimus*, Listed Endangered		✓		✓								✓	✓				
Whooping crane, *Grus americana*, Listed Endangered	▲		▲				▲	▲			▲						▲
Yellow-billed cuckoo, *Coccyzus americanus*, Candidate for Listing		✓		✓								✓	✓			✓	
Black-footed ferret, *Mustela nigripes*, Listed Endangered	✓	✓	✓	✓	✓	✓		✓		✓		✓	✓	✓		✓	
Canada lynx, *Lynx* canadensis, Listed Threatened		✓		✓			✓		✓		✓	✓	✓		✓	✓	
Preble's meadow jumping mouse, *Zapus hudsonius preblei*, Listed Threatened	✓		✓				✓	✓									✓
Boreal toad, *Bufo boreas boreas*, Candidate for Listing				✓			✓		✓		✓	✓				✓	

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COUNTIES	ADAMS	ALAMOSA	ARAPAHOE	ARCHULETA	BACA	BENT	BOULDER	BROOMFIELD	CHAFFEE	CHEYENNE	CLEAR CREEK	CONEJOS	COSTILLA	CROWLEY	CUSTER	DELTA	DENVER
Arkansas darter, *Etheostoma cragini*, Candidate for Listing					✓	✓				✓				✓			
Bonytail, *Gila elegans*, (presumed-historical) Listed Endangered																✓	
Colorado pikeminnow, *Ptychocheilus lucius*, Listed Endangered				*												©	
Greenback cutthroat trout, *Oncorhynchus clarki stomias*, Listed Threatened							✓				✓				✓		
Humpback Chub, *Gila cypha*, Listed Endangered																✓	
Pallid sturgeon, *Scaphirhynchus albus*, Listed Endangered	▲		▲				▲	▲			▲						▲
Razorback sucker, *Xyrauchen texanus*, Listed Endangered				*												©	
Clay-loving wild buckwheat, *Eriogonum pelinophilum*, Listed Endangered																✓	
Colorado butterfly plant, *Gaura neomexicana* ssp. *coloradensis*, Listed Threatened	✓		✓				✓	✓									✓
Uinta Basin hookless cactus, *Sclerocactus glaucus*, Listed Threatened																✓	
Uncompahgre fritillary butterfly, *Boloria acrocnema*, Listed Endangered									✓								
Ute ladies'-tresses, *Spiranthes diluvialis*, Listed Threatened	✓		✓				✓	✓									✓

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FEDERALLY LISTED AND CANDIDATE SPECIES & THEIR STATUS IN COLORADO
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COUNTIES →	DOLORES	DOUGLAS	EAGLE	ELBERT	EL PASO	FREMONT	GARFIELD	GILPIN	GRAND	GUNNISON	HINSDALE	HUERFANO	JACKSON	JEFFERSON	KIOWA	KIT CARSON
Bald eagle, *Haliaeetus leucocephalus*, Listed Threatened	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
Gunnison sage-grouse, *Centrocercus minimus*, Candidate for Listing	✓		✓				✓			✓						
Least tern (interior population), *Sterna antillarum*, Listed Endangered		▲		▲	▲			▲					▲	▲	✓	
Lesser prairie chicken, *Tympanuchus pallidicinctus*, Candidate for List															✓	
Mexican spotted owl, *Strix occidentalis lucida*, Listed Threatened	✓	✓			✓	✓	✓	✓				✓		✓		
Piping plover, *Charadrius melodus*, Listed Threatened		▲		▲	▲			▲					▲	▲	✓	
Southwestern willow flycatcher, *Empidonax traillii extimus*, Listed Endangered	✓										✓					
Whooping crane, *Grus americana*, Listed Endangered		▲		▲	▲			▲					▲	▲		
Yellow-billed cuckoo, *Coccyzus americanus*, Candidate for Listing	✓		✓				✓		✓	✓	✓					
Black-footed ferret, *Mustela nigripes*, Listed Endangered		✓	✓	✓	✓	✓									✓	✓
Canada lynx, *Lynx canadensis*, Threatened	✓		✓			✓	✓	✓	✓	✓	✓	✓	✓	✓		
Preble's meadow jumping mouse, *Zapus hudsonius preblei*, Listed Threatened		©		✓	✓									©		
Arkansas darter, *Etheostoma cragini*, Candidate for Listing				✓	✓	✓						✓			✓	
Bonytail, *Gila elegans*, (presumed-historical) Listed Endangered	*		*				✓		*	*	*					
Colorado pikeminnow, *Ptychocheilus lucius*, Listed Endangered	*		*				©		*	*	*					
Greenback cutthroat trout, *Oncorhynchus clarki stomias*, Listed Threatened		✓			✓							✓				
Humpback Chub, *Gila cypha*, Listed Endangered	*		*				✓		*	*	*					

COUNTIES→

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	DOLORES	DOUGLAS	EAGLE	ELBERT	EL PASO	FREMONT	GARFIELD	GILPIN	GRAND	GUNNISON	HINSDALE	HUERFANO	JACKSON	JEFFERSON	KIOWA	KIT CARSON
Pallid sturgeon, *Scaphirhynchus albus*, Listed Endangered		▲		▲	▲			▲					▲	▲		
Razorback sucker, *Xyrauchen texanus*, Listed Endangered	*		*				©		*	*	*					
Pawnee montane skipper, *Hesperia leonardus montana*, Listed Threatened		✓												✓		
Uncompahgre fritillary butterfly, *Boloria acrocnema*, Listed Endangered	✓		✓							✓	✓					
Boreal toad, *Bufo boreas boreas*, Candidate for Listing	✓		✓				✓	✓	✓	✓	✓		✓			
Colorado butterfly plant, *Gaura neomexicana* ssp. *coloradensis*, Listed Threatened		✓			✓									✓		
De Beque phacelia, *Phacelia submutica*, Candidate for Listing							✓									
North Park phacelia, *Phacelia formosula*, Listed Endangered													✓			
Osterhout milkvetch, *Astragalus osterhoutii*, Listed Endangered									✓							
Parachute beardtongue, *Penstemon debilis*, Candidate for Listing							✓									
Penland beardtongue, *Penstemon penlandii*, Listed Endangered									✓							
Slender moonwort, *Botrychium lineare*, Candidate for Listing					✓											
Uinta Basin hookless cactus, *Sclerocactus glaucus*, Listed Threatened							✓									
Ute ladies'-tresses, *Spiranthes diluvialis*, Listed Threatened		✓			✓									✓		

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FEDERALLY LISTED AND CANDIDATE SPECIES & THEIR STATUS IN COLORADO
1

COUNTIES →	LAKE	LA PLATA	LARIMER	LAS ANIMAS	LINCOLN	LOGAN	MESA	MINERAL	MOFFAT	MONTEZUMA	MONTROSE	MORGAN	OTERO	OURAY	PARK	PHILLIPS
Bald eagle, *Haliaeetus leucocephalus*, Listed Threatened	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Gunnison sage-grouse, *Centrocercus minimus*, Candidate for Listing		✓					✓			✓	✓			✓		
Least tern (interior population), *Sterna antillarum*, Listed Endangered			▲		▲	▲						✓	✓		▲	
Lesser prairie chicken, *Tympanuchus pallidicinctus*, Candidate for Listing					✓											
Mexican spotted owl, *Strix occidentalis lucida*, Listed Threatened		✓	✓	✓					✓	✓	✓				✓	
Piping plover, *Charadrius melodus*, Listed Threatened			▲		▲	✓						✓	✓		▲	
Southwestern willow flycatcher, *Empidonax traillii extimus*, Listed Endangered		✓						✓		✓						
Yellow-billed cuckoo, *Coccyzus americanus*, Candidate for Listing		✓					✓	✓	✓	✓	✓			✓		
Whooping crane, *Grus americana*, Listed Endangered			▲		▲	▲						▲			▲	
Black-footed ferret, *Mustela nigripes*, Listed Endangered		✓	✓	✓	✓				✓	✓	✓	✓	✓			
Canada lynx, *Lynx canadensis*, Listed Threatened	✓	✓	✓	✓			✓	✓	✓	✓	✓			✓	✓	
Preble's meadow jumping mouse, *Zapus hudsonius preblei*, Listed Threatened			©									✓				
Arkansas darter, *Etheostoma cragini*, Candidate for Listing				✓	✓								✓			
Bonytail, *Gila elegans*, (presumed-historical) Listed Endangered							©		©		*			*		
Colorado pikeminnow, *Ptychocheilus lucius*, Listed Endangered		*					©	*	©	*	*			*		
Greenback cutthroat trout, *Oncorhynchus clarki stomias*, Listed Threatened	✓		✓												✓	
Humpback chub, *Gila cypha*, Listed Endangered							©		©		*			*		

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1

COUNTIES →	LAKE	LA PLATA	LARIMER	LAS ANIMAS	LINCOLN	LOGAN	MESA	MINERAL	MOFFAT	MONTEZUMA	MONTROSE	MORGAN	OTERO	OURAY	PARK	PHILLIPS
Pallid sturgeon, *Scaphirhynchus albus*, Listed Endangered			▲		▲	▲						▲			▲	
Razorback sucker, *Xyrauchen texanus*, Listed Endangered		*					©	*	©	*	*			*		
Boreal toad, *Bufo boreas boreas*, Candidate for Listing	✓	✓	✓				✓	✓	✓	✓				✓	✓	
Pawnee montane skipper, *Hesperia leonardus montana*, Listed Threatened															✓	
Uncompahgre fritillary butterfly, *Boloria acrocnema*, Listed Endangered	✓	✓						✓						✓	✓	
Clay-loving wild buckwheat, *Eriogonum pelinophilum*, Listed Endangered											✓					
Colorado butterfly plant, *Gaura neomexicana* ssp. *coloradensis*, Listed Threatened			✓													
De Beque phacelia, *Phacelia submutica*, Candidate for Listing							✓									
Knowlton's cactus, *Pediocactus knowltonii*, Listed Endangered		✓														
Mancos milkvetch, *Astragalus humillimus*, Listed Endangered										✓						
Mesa Verde cactus, *Sclerocactus mesae-verdae*, Listed Threatened										✓						
Penland alpine fen mustard, *Eutrema penlandii*, Listed Threatened	✓														✓	
Sleeping Ute milk-vetch, *Astragalus tortipes*, Candidate for Listing										✓						
Slender moonwort, *Botrychium lineare*, Candidate for Listing	✓															
Uinta Basin hookless cactus, *Sclerocactus glaucus*, Listed Threatened							✓				✓					
Ute ladies'-tresses, *Spiranthes diluvialis*, Listed Threatened			✓									✓				

U. S. Fish and Wildlife Service
Ecological Services
Colorado Field Office

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COUNTIES →	PITKIN	PROWERS	PUEBLO	RIO BLANCO	RIO GRANDE	ROUT	SAGUACHE	SAN JUAN	SAN MIGUEL	SEDGWICK	SUMMIT	TELLER	WASHINGTON	WELD	YUMA
Bald eagle, *Haliaeetus leucocephalus*, Listed Threatened	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Gunnison sage-grouse, *Centrocercus minimus*, Candidate for Listing	✓				✓		✓		✓						
Least tern (interior population), *Sterna antillarum*, Listed Endangered		✓								✓		▲	▲	▲	
Lesser prairie chicken, *Tympanuchus pallidicinctus*, Candidate for Listing		✓													
Mexican spotted owl, *Strix occidentalis lucida*, Listed Threatened	✓		✓		✓		✓		✓		✓	✓		✓	
Piping plover, *Charadrius melodus*, Listed Threatened		✓								✓		▲	▲	▲	
Southwestern willow flycatcher, *Empidonax traillii extimus*, Listed Endangered					✓		✓	✓	✓						
Whooping crane, *Grus americana*, Listed Endangered										▲		▲	▲	▲	
Yellow-billed cuckoo, *Coccyzus americanus*, Candidate for Listing	✓			✓	✓	✓	✓	✓	✓		✓				
Black-footed ferret, *Mustela nigripes*, Listed Endangered		✓	✓	✓			✓		✓				✓	✓	
Canada lynx, *Lynx canadensis*, Listed Threatened	✓		✓	✓	✓	✓	✓	✓	✓		✓				
Preble's meadow jumping mouse, *Zapus hudsonius preblei*, Listed Threatened												©		✓	
Pawnee montane skipper, *Hesperia leonardus montana*, Listed Threatened												✓			
Uncompahgre fritillary butterfly, *Boloria acrocnema*, Listed Endangered	✓				✓		✓	✓	✓		✓				
Arkansas darter, *Etheostoma cragini*, Candidate for Listing		✓	✓												
Bonytail, *Gila elegans*, (presumed-historical) Listed Endangered	*			*		*	*		*		*				
Colorado pikeminnow, *Ptychocheilus lucius*, Listed Endangered	*			©	*	*	*	*	*		*				

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1

COUNTIES →	PITKIN	PROWERS	PUEBLO	RIO BLANCO	RIO GRANDE	ROUTT	SAGUACHE	SAN JUAN	SAN MIGUEL	SEDGWICK	SUMMIT	TELLER	WASHINGTON	WELD	YUMA
Greenback cutthroat trout, *Oncorhynchus clarki stomias*, Listed Threatened			✓												
Humpback Chub, *Gila cypha*, Listed Endangered	*			*		*	*		*		*				
Pallid sturgeon, *Scaphirhynchus albus*, Listed Endangered										▲		▲	▲	▲	
Razorback sucker, *Xyrauchen texanus*, Listed Endangered	*			*	*	*	*	*	*		*				
Boreal toad, *Bufo boreas boreas*, Candidate for Listing	✓			✓	✓	✓	✓	✓	✓		✓				
Colorado butterfly plant, *Gaura neomexicana* spp. *coloradensis*, Listed Threatened			✓											✓	
Dudley Bluffs (Piceance) twinpod, *Physaria obcordata*, Listed Threatened				✓											
Dudley Bluffs bladderpod, *Lesquerella congesta*, Listed Threatened				✓											
Graham beardtongue, *Penstemon grahamii*, Candidate for Listing				✓											
Penland alpine fen mustard, *Eutrema penlandii*, Listed Threatened											✓				
Ute ladies'-tresses, *Spiranthes diluvialis*, Listed Threatened														✓	
White River beardtongue (penstemon), *Penstemon scariosus* var. *albifluvis*, Candidate for Listing				✓											

TABLE TERMINOLOGY

✓	The check mark indicates that the species is present in that county or that the county is within the historical range of the species
*	Water depletions in the Upper Colorado River and San Juan River basins, in these counties may affect these species
▲	Water depletions in the North or South Platte rivers, in these counties may affect these species
©	The species is present in the county and there is designated critical habitat for the species within the county
Candidate	Means there is sufficient information indicating that formal listing under the ESA may be appropriate
Proposed	Means the species is proposed for possible addition to the Lists of Endangered and Threatened Wildlife and Plants under the ESA
Endangered	Means the species could become extinct
Threatened	Means the species could become endangered

ADDENDUM F-B:

RESULTS OF COLORADO NATURAL HERITAGE
PROGRAM DATABASE SEARCH

Colorado State University

Knowledge to Go Places

October 20, 2004

Colorado Natural Heritage Program
Colorado State University
8002 Campus Delivery
Fort Collins, Colorado 80523-8002
(970) 491-1309
FAX: (970) 491-3349
www.cnhp.colostate.edu

Karyn Coppinger
TRC Solutions
605 Skyline Drive
Laramie, WY 82070

Dear Karyn:

The Colorado Natural Heritage Program (CNHP) is in receipt of your request for information regarding the TRC area of interest in Logan County. In response, I have searched our Biological and Conservation Datasystem (BCD) for natural heritage elements (occurrences of significant natural communities and rare, threatened or endangered plants and animals) documented from the vicinity of the area specified in your request, specifically within the following USGS 7.5' Minute Quadrangles: Peetz and Haystack Butte.

The enclosed report describes natural heritage resources known from this area and gives location (by Township, Range, and Section), precision information, and the date of last observation of the element at that location. This report includes elements known to occur within the specified project site, as well as elements known from similar landscapes near the site. Please note that "precision" reflects the resolution of original data. For example, an herbarium record from "4 miles east of Colorado Springs" provides much less spatial information than a topographic map showing the exact location of the occurrence. "Precision" codes of Seconds, Minutes, and General are defined in the footer of the enclosed report.

The report also outlines the status of known elements. We have included status according to Natural Heritage Program methodology and legal status under state and federal statutes. Natural Heritage ranks are standardized across the Heritage Program network, and are assigned for global and state levels of rarity. They range from "1" for critically imperiled or extremely rare elements, to "5" for those that are demonstrably secure.

You may notice that some occurrences do not have sections listed. Those species have been designated as "sensitive" due to their rarity and threats by human activity. Peregrine falcons, for example, are susceptible to human breeders removing falcon eggs from their nests. For these species, CNHP does not normally provide location information beyond township and range. Please contact us should you require more detailed information for sensitive occurrences.

There are no CNHP designated Potential Conservation Areas located within your project area. In order to successfully protect populations or occurrences, it is necessary to delineate conservation areas. These conservation areas focus on capturing the ecological processes that are necessary to support the continued existence of a particular element of natural heritage significance. Conservation areas may include a single occurrence of a rare element or a suite of rare elements or significant features.

Natural Heritage Program
COLORADO

The goal of the process is to identify a land area that can provide the habitat and ecological processes upon which a particular element or suite of elements depends for their continued existence. The best available knowledge of each species' life history is used in conjunction with information about topographic, geomorphic, and hydrologic features, vegetative cover, as well as current and potential land uses. The proposed boundary does not automatically exclude all activity. It is hypothesized that some activities will cause degradation to the element or the process on which they depend, while others will not. Consideration of specific activities or land use changes proposed within or adjacent to the preliminary conservation planning boundary should be carefully considered and evaluated for their consequences to the element on which the conservation unit is based.

The Colorado Division of Wildlife has legal authority over wildlife in the state. CDOW would therefore be responsible for the evaluation of and final decisions regarding any potential effects a proposed project may have on wildlife. If you would like more specific information regarding these or other vertebrate species in the vicinity of the area of interest, please contact the Colorado Division of Wildlife.

The information contained herein represents the results of a search of Colorado Natural Heritage Program's (CNHP) Biological and Conservation Data System (BCD), and can be used as notice to anticipate possible impacts or identify areas of interest. Care should be taken in interpreting these data. Sensitive elements are currently known from within the proposed project area, and additional, but undocumented, elements may also exist (see enclosed report). Please note that the absence of data for a particular area, species, or habitat does not necessarily mean that these natural heritage resources do not occur on or adjacent to the project site, rather that our files do not currently contain information to document their presence. CNHP information should not replace field studies necessary for more localized planning efforts, especially if impacts to wildlife habitat are possible.

Although every attempt is made to provide the most current and precise information possible, please be aware that some of our sources provide a higher level of accuracy than others, and some interpretation may be required. CNHP's data system is constantly updated and revised. Please contact CNHP for an update or assistance with interpretation of this natural heritage information.

The data contained in the report is the product and property of the Colorado Natural Heritage Program (CNHP), a sponsored program at Colorado State University (CSU). The data contained herein are provided on an as is, as available basis without warranties of any kind, expressed or implied, including (but not limited to) warranties of merchantability, fitness for a particular purpose, and non-infringement. CNHP, CSU and the state of Colorado further expressly disclaim any warranty that the data are error free or current as of the date supplied.

Sincerely,

Michael Menefee
Environmental Review Coordinator

Enc.

Natural Heritage Program
COLORADO

Colorado Natural Heritage Program Environmental Review

Locations and Status of Rare and/or Imperiled Species and Natural Communities known from or likely to occur within the following USGS 7.5' Minute Quadrangles: Peetz & Haystack Butte in Logan County, Colorado

Report generated: 20 October 2004

EO_ID	major group	scientific name	common name	prec	last obs	trs	grank	srank	eorank	ESA	fed stat	st stat
12,022	Birds	*Calcarius mccownii*	Mccown's Longspur	S	2002-06-29	011N051W 18; 011N052W 13;	G4	S2B	E		USFS	

precision codes: S = "seconds", location known within 100m; M = "minutes", location known within 1 mile; G = "general", location known within 5 miles

ADDENDUM F-C:

WESTERN'S DETERMINATION OF EFFECT AND REQUEST
FOR CONSULTATION FOR ENDANGERED, THREATENED, PROPOSED,
AND CANDIDATE SPECIES FOR THE SPRING CANYON WIND PROJECT

Department of Energy
Western Area Power Administration
Rocky Mountain Customer Service Region
P.O. Box 3700
Loveland, CO 80539-3003

MAY 18 2005

CERTIFIED MAIL - RETURN RECEIPT REQUESTED – 7000 1530 0004 1317 6462

Ms. Susan Linner
Colorado Field Supervisor
Ecological Services
U.S. Fish and Wildlife Service
755 Parfet Street, Suite 361
Lakewood, CO 80215

SUBJECT: Determination of Affect and Request for Consultation for Endangered, Threatened, Proposed, and Candidate Species for the Spring Canyon Wind Project

Dear Ms. Linner:

The Western Area Power Administration (Western), an agency of the U.S. Department of Energy (DOE), is the lead Federal agency for a project to interconnect a 130-MW wind project to Western's existing 230-kV Sidney to North Yuma Transmission Line. Spring Canyon Energy LLC (SCE) a wholly-owned affiliate of Invenergy, LLC, has applied to Western to interconnect a proposed 130-MW wind power facility to Western's existing 230-kV Sidney to North Yuma Transmission Line. The Spring Canyon Wind Project would be constructed entirely on private land located east of the town of Peetz, in Logan County, Colorado. SCE has obtained or will obtain easements from the private landowners to construct and operate the wind farm. The wind farm would consist of approximately 87 1.5-MW or 72 1.8-MW wind turbines and associated facilities. The wind turbine generators would be supported by tubular towers. Support facilities would include step-up transformers, an electrical substation, underground and overhead power collection and communication lines, roads, and an operation and maintenance facility.

A list of Federally listed threatened and endangered species, those proposed for listing, and candidates potentially occurring in the project area, was developed using the *Federally Listed and Candidate Species List for Colorado by County: Logan County* (August 16, 2004) that was provided by the Colorado Field Office of the U.S. Fish and Wildlife Service (USFWS). The USFWS, in response to a request letter dated October 28, 2004, indicated that the following threatened, endangered and candidate species may occur with the project area:

Bald eagle (*Haliaeetus leucocephalis*)
Whooping crane (*Grus americana*)
Piping plover (*Charadrius melodus*)

Interior least tern (*Sterna antillarum*)
Pallid sturgeon (*Scaphirhynchus albus*)

A Biological Assessment (BA) was prepared for the project to address potential impacts to threatened and endangered species. Appendix F of the enclosed pre-approval Environmental Assessment contains the BA.

Based on the analysis contained in the BA, Western has determined that the project may affect, but is not likely to adversely affect, bald eagles in Colorado.

The whooping crane, piping plover, and interior least tern may occur within the project area and potential for impacts would be similar to those described for bald eagles. However, these species and the pallid sturgeon are of concern primarily due to potential for water depletions from the South Platte River. During construction of the 130-MW wind project, an estimated 1,526,335 gallons (4.7 acre-ft) of water would be consumed. During the 39-year operational life-of-project, an additional 1,272,375 gallons (3.9 acre-ft) would be consumed. Total water usage over the life-of-project would be 2,798,710 gallons, so over a 40-year life-of-project, an average of 69,968 gallons (0.2acre-ft) per year would be consumed.

In 2002, the Fish Wildlife Service (FWS) prepared a biological opinion in its *Revised Intra-Service Section 7 Consultation for Federal Agency Actions Resulting in Minor Water Depletions to the Platte River System* (FWS 2002). The biological opinion covers any Federal actions other than wetland restoration projects that result in average annual depletions of 25 acre-ft or less to the Platte River system, regardless of location within the basin. The effects analysis and conservation measures apply only to federally listed species, designated whooping crane habitat, and proposed critical habitat for the piping plover along the Platte River in Nebraska.

In accordance with the above-referenced biological opinion, "Federal agencies should continue to conclude that each action resulting in a depletion of 25-acre feet or less per year to the Platte River system may adversely affect the whooping crane, interior least tern, piping plover, and/or pallid sturgeon, designated whooping crane critical habitat, and proposed piping plover critical habitat" (FWS 2002). Since the Spring Canyon wind project would result in a depletion of less than 25-acre ft/year, Western has determined that the project may adversely affect these species and critical habitats. Western hereby requests consultation with the FWS and requests the FWS to debit the Fish and Wildlife Foundation account to off-set project impacts on downstream Platte River species.

If you are in agreement with our determinations, we would appreciate a letter of concurrence from the USFWS. If you have any questions or comments regarding this project, please telephone Rodney Jones at (970) 461-7371. Thank you for your assistance and cooperation this project.

Sincerely,

Joel K. Bladow
Regional Manager

Enclosure

cc:

Mr. Bruce McCloskey
Director
Colorado Division of Wildlife
6060 Broadway
Denver, CO 80216

Ms. Kirstie M. Bay
Colorado Division of Wildlife
Wildlife Conservation Biologist-NE Colorado
122 East Edison Street
Brush, CO 80723
(enclosure sent under separate cover)

bcc:

Mr. Joel Schroeder
Invenergy L.L.C.
1 South Wacker, Suite 2020
Chicago, IL 60606

Ms. Laryn Coppeinger
TRC Mariah Associates, Inc.
605 Skyline Drive
Laramie, WY 82070

D. Swanson, A7400, Lakewood, CO
M.Barger, A7400, Lakewood, CO
J. Bridges, A7400, Lakewood, CO
J0400
J0420
J5000
J5640
(w/out copy of enclosure)

ADDENDUM F-D:

BIOLOGICAL OPINION FOR THE SPRING CANYON WIND PROJECT, LOGAN COUNTY, COLORADO, ES/CO: SPLATTE/MINOR DEPLETIONS, MAIL STOP 65412, ES/CO: ES/LK-6-CO-05-4-012, DATED JUNE 7, 2005

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Colorado Field Office
755 Parfet Street, Suite 361
Lakewood, Colorado 80215

IN REPLY REFER TO:
ES/CO: SPlatte/Minor Depletions
Mail Stop 65412
ES/CO: ES/LK-6-CO-05-F-012

JUN - 7 2005

Mr. Joel K. Bladow
Department of Energy
Western Area Power Administration
Rocky Mountain Service Region
P.O. Box 3700
Littleton, Colorado 80218-6901

RE: Biological Opinion for the Spring Canyon Wind Project, Logan County, Colorado (DOE/EA-1521)

Dear Mr. Bladow:

In accordance with section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 et. seq.) and the Interagency Cooperation Regulations (50 CFR 402), the U.S. Fish and Wildlife Service (Service) has reviewed your May 17, 2005, letter and Environmental Assessment/Biological Assessment (EA/BA) regarding impacts of the proposed wind project on federally listed species and designated critical habitat.

Spring Canyon Energy LLC (SCE), a wholly owned affiliate of Invenergy, LLC, has applied to the Western Area Power Administration (Western) to interconnect a proposed 130-MW wind power facility to Western's existing 230-kV Sidney to North Yuma Transmission Line. The proposed wind project would be constructed entirely on private land located east of the town of Peetz. SCE has obtained or would obtain easements from the private landowners to construct and operate the wind farm. The proposed wind farm would consist of approximately 87 1.5-MW or 72 1.8-MW wind turbines and associated facilities. The wind turbine generators would be supported by tubular towers. Support facilities would include step-up transformers, an electrical substation, underground and overhead power collection and communication lines, roads, and an operation and maintenance facility. During construction of the proposed 130-MW wind project, an estimated 1,526,335 gallons or 4.7 acre-feet (af) of water would be consumed. According to Western's calculations for total water usage over a 40-year life-of-project, the proposed project would result in minor water depletions to the Platte River system of **0.21 af/year**. For purposes of calculating depletion charges, the Service has classified this as an existing project.

Western has determined that the water depletion associated with the proposed action *may affect and is likely to adversely affect* the federally-listed whooping crane (*Grus americana*), the interior least tern (*Sterna antillarum*), the piping plover (*Charadrius melodus*) and the pallid sturgeon (*Scaphirhynchus albus)* and may have an impact on designated critical habitat associated with the Platte River in Nebraska. Western determined that the proposed project *may affect but is not likely to adversely affect* bald eagles (*Haliaeeteus leucocephalus*) in Colorado. Western also determined that no other threatened or endangered species, either currently listed or proposed for listing, nor designated or proposed critical habitat will be affected by this project.

Since 1978, the Service has consistently taken the position in its section 7 consultations that Federal agency actions resulting in water depletions to the Platte River system are likely to jeopardize the continued existence of one or more federally-listed threatened or endangered species and adversely modify or destroy designated and proposed critical habitat. During the course of informal consultations with a number of Federal agencies, the Service learned that there are over 1,000 proposed projects which will deplete water from the Platte River system and require formal section 7 consultation. It was also determined that the vast majority of these projects would likely result in individual depletions of 25 af or less per year. To effectively deal with such an anticipated large workload, it was necessary for the Service to develop a streamlined approach which meets the requirements of section 7 for offsetting the adverse effects of each Federal agency action resulting in a minor water depletion.

An intra-Service section 7 consultation was conducted in coordination with those Federal agencies whose actions may result in minor water depletions of 25 af or less per year to the Platte River system. This led to the issuance of a biological opinion by the Service on June 13, 1996, which provides reasonable and prudent alternatives to avoid the likelihood of jeopardy to federally-listed species and adverse modification or destruction of designated critical habitat occurring along the Platte River. A revision of the 1996 biological opinion made a no jeopardy determination contingent upon the implementation of conservation measures (formerly reasonable and prudent alternatives in the 1996 biological opinion) by the Federal agencies. To satisfy the requirements of the ESA, Federal action agencies and project proponents (i.e., Federal and non-Federal) are provided conservation measures described in the 2002 revised biological opinion furnished to your agency. Consequently, the Service concurs with your determination that the proposed wind project is likely to adversely affect the federally-listed whooping crane, interior least tern, piping plover, pallid sturgeon, designated whooping crane critical habitat, and piping plover critical habitat. The Service also concurs with your determination that bald eagles are not likely to be adversely affected by the proposed project.

It is our understanding that you would like to take advantage of the conservation measure authorizing the use of funds in a National Fish and Wildlife Foundation account to offset the project-related impacts to Platte River fish and wildlife resources. Therefore, it has been calculated that **$6.97** will be debited from the Foundation account to use in restoring Platte River habitat as described in the revised biological opinion.

The Service hereby agrees that the process described above will serve to offset the project-related impacts and avoid the likelihood of adverse effects to federally-listed species and their designated critical habitat. Any need for reinitiation of formal consultation on this proposed action is outlined in the CONCLUSION section of the revised biological opinion.

Section 9 of the ESA, as amended, prohibits taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish and wildlife without a special exemption. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the Agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of an incidental take statement. The Service does not anticipate that the proposed action will result in any incidental take of any threatened or endangered species. Therefore, no incidental take is authorized.

The Bald and Golden Eagle Protection Act of 1940 (BGEPA), as amended (16 U.S.C. 668 et. seq.) and the Migratory Bird Treaty Act of 1918 (MBTA), as amended (16 U.S.C. 703 et. seq.) are also potentially applicable for wind projects involving transmission lines such as the proposed project. The project EA/BA described measures to avoid impacts to eagles, other raptors, and migratory birds including adherence to the *Interim Guidance on Avoiding and Minimizing*

Impacts to Wildlife from Wind Turbines, which the Service released in 2003, and the *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996*, which the Edison Electric Institute published. In addition, the applicant would conduct pre-construction surveys for nesting birds within suitable habitat in the project area and time construction to avoid activities within appropriate buffer zone(s) of any active nests until after the young have fledged.

Efforts to identify and avoid nesting birds, nests, and their young do not assure that project operations, as enabled by Western's execution of the interconnect agreement, will not result in adverse effects to eagles and other migratory birds. Although absolution from liability under the ESA, BGEPA, and MBTA is not possible, the Service Division of Law Enforcement and the Department of Justice have used enforcement and prosecutorial discretion when companies/ individuals have made efforts to avoid the unauthorized take of eagles and other migratory birds.

We appreciate the efforts made to date to resolve the issues of Platte River depletive effects to listed species and potential project impacts to raptors and other migratory birds. If the Service can be of further assistance, please contact Sandy Vana-Miller in this office by calling (303) 275-2370.

Sincerely,

Susan C. Linner
Colorado Field Supervisor

cc: FWSR6, B. Dach, J. McKee
FWSR6/ES/GJ, E. Mayo
FWSR6/ES/LK, S. Vana-Miller
CDOW, Kirstie Bay
Fish & Wildlife Foundation, Rebecca Kramer